We Claim:

1. In a Computer Aided Design (CAD) environment, a method, comprising the steps of:

providing a system model of a Micro Electro-Mechanical Systems (MEMS) displayed to a user in a schematic view, said model including a plurality of model components;

generating a graphical three-dimensional (3D) view of said model depicted by the schematic view for display to the user; and

cross-referencing said 3D view and said schematic view so that changes in the 3D view are reflected in the model components depicted in the schematic view and changes in the model components depicted in the schematic view are reflected in the 3D view.

2. The method of claim1 wherein the 3D view displays one of the shape, orientation and position of said model.

3. The method of claim 1 wherein the displayed 3D view depicts a position of at least one mechanical connection point in said model, said connection point defined by the parameters of connected mechanical parts.

4. The method of claim 1, comprising the further steps of:

selecting a model component depicted in said schematic view;

indicating visually that a model component in said schematic view has been selected; and

indicating visually a corresponding component in said 3D view.

5. The method of claim 4 wherein highlighting is used to indicate visually the selected model component in said schematic view and the corresponding model component in said 3D view.

6. The method of claim 1, comprising the further steps of:

selecting a model component depicted in said 3D view;

indicating visually that a model component depicted in the 3D view has been selected; and

indicating visually a corresponding model component in said schematic view.

7. The method of claim 6 wherein highlighting is used to indicate visually the selected model component depicted in the 3D view and the corresponding model component in said schematic view.

8. The method of claim 1, comprising the further steps of:

analyzing programmatically said system model; and

indicating visually errors in said system model on at least one model component displayed in said 3D graphical view.

9. The method of claim 1, comprising the further steps of:

altering said 3D view in response to a user command.

10. The method of claim 1, comprising the further steps of:

providing a 3D view generator associated with at least one model component depicted in said schematic view, said 3D view generator including information used to programmatically generate a 3D view of a model component;

analyzing programmatically said system model to identify model components associated with a 3D view generator; and

using at least one of said associated view generators to create a 3D representation of said model component in said 3D view.

11. The method of claim 1, comprising the further steps of:

providing a symbolic view of the model depicted in said schematic that contains a list of component names, said list arranged in a hierarchical order of model components and sub-components.

12. The method of claim 11, comprising the further step of:

synchronizing said symbolic view with at least one of the display of said schematic view and the 3D view such that a selection of a model component in said symbolic view is visually indicated in the symbolic view and at least one of the display of the schematic view and the 3D view.

13. The method of claim 11, comprising the further step of:

synchronizing the symbolic view with at least one of the display of said schematic view and said 3D view such that a selection of a model component in at least one of the display of the schematic view and the 3D view is visually indicated in at least one of the display of the schematic view and the 3D view, and in the symbolic view.

14. The method of claim 1, wherein at least some data for said model components displayed in said 3D view is retrieved from a netlist.

15. The method of claim 1 wherein the plurality of model components in the system model are selected from a MEMS component library.

16. In an electronic device holding a design and simulation environment, a medium holding executable steps for a method, said method comprising the steps of:

providing a system model of a Micro Electro-Mechanical Systems (MEMS) displayed to a user in a schematic view, said model including a plurality of model components;

generating a graphical three-dimensional (3D) view of said system model depicted by the schematic view for display to the user; and

cross-referencing said 3D view and said schematic view so that changes in the 3D view are reflected in the model components depicted in the schematic view and changes in the model components depicted in the schematic view are reflected in the 3D view.

17. The medium of claim16 wherein the graphical 3D view displays one of the shape, orientation and position of said system model.

18. The medium of claim 16 wherein the displayed graphical 3D view depicts a position of at least one mechanical connection point in said system model, said connection point defined by the parameters of connected mechanical parts.

19. The medium of claim 16, wherein said method comprises the further steps of:

selecting a model component depicted in said schematic view;

indicating visually that a model component in said schematic view has been selected; and

indicating visually a corresponding component in said 3D view.

20. The medium of claim 19 wherein highlighting is used to indicate visually the selected model component in said schematic view and the corresponding model component in said 3D view.

21. The medium of claim 16 wherein said method comprises the further steps of:

selecting a model component depicted in said 3D view;

indicating visually that a model component depicted in the 3D view has been selected; and

indicating visually a corresponding model component in said schematic view.

22. The medium of claim 21 wherein highlighting is used to indicate visually the selected model component depicted in the 3D view and the corresponding model component in said schematic view.

23. The medium of claim 16 wherein said method comprises the further steps of:

analyzing programmatically said system model; and

indicating visually errors in said system model on at least one model component in said 3D view.

24. The medium of claim 16 wherein said method comprises the further step of:

altering the rendering of said 3D view in response to a user command.

25. The medium of claim 16 wherein said method comprises the further step of:

providing a 3D view generator associated with at least one model component depicted in said schematic view, said 3D view generator including information used to programmatically generate a 3D view of a model component;

analyzing programmatically said system model to identify model components associated with a 3D view generator; and

using at least one of said associated view generators to create a 3D representation of said model component in said 3D view.

26. The medium of claim 16 wherein said method comprises the further step of:

providing a symbolic view of the model depicted in said schematic view that lists the component names, said symbolic view arranged in a hierarchical order of model components and sub-components.

27. The medium of claim 26 wherein said method comprises the further step of:

synchronizing said symbolic view with at least one the display of said schematic view and the 3D view such that a selection of a model component in said symbolic view is visually indicated in the symbolic view and at least one of the display of the schematic view and the 3D graphical view.

28. The medium of claim 26 wherein said method comprises the further step of:

synchronizing the symbolic view with at least one of the display of said schematic view and said 3D view such that a selection of a model component in at least one of the display of the schematic view and the 3D view is visually indicated in at least one of the display of the schematic view and the 3D view and in the symbolic view.

29. The medium of claim 16, wherein at least some data for said model components displayed in said 3D view is retrieved from a netlist.

30. The medium of claim 16 wherein said plurality of model components in said system model are selected from a MEMS component library.

31. In a CAD environment in an electronic device, a method comprising the steps of:

providing simulation results from simulation of a system model of a Micro Electro-Mechanical System (MEMS), said system model having a plurality of model components;

providing a graphical three-dimensional (3D) view of said system model; and

displaying the results of said simulation in said 3D view, said 3D view being progressively altered to reflect the simulation results during different points in said simulation.

32. The method of claim 31 wherein said system model includes at least one optical component.

33. The method of claim 31 wherein said system model includes at least one mechanical structure.

34. The method of claim 33 wherein the simulation of said mechanical structure involves at least one of displacements, mode shapes and distortion of the mechanical structure.

35. The method of claim 33 wherein said system model includes at least one connection between mechanical components, said connection representing mechanical degrees of freedom of the connected mechanical components.

36. The method of claim 31 wherein said simulation results are animated in said 3D view.

37. The method of claim 31 wherein at least one of the speed and viewing characteristics of the 3D view of the simulation results of said simulation is controlled by user-set parameters.

38. The method of claim 31 wherein said simulation is one of a circuit simulation and signal flow simulation.

39. The method of claim 31, comprising the further steps of:

associating a 3D view generator with a model component referenced by said system model;

analyzing programmatically said system model to identify model components associated with a 3D view generator; and

using said 3D view generator to generate the display of the simulation results.

40 The method of claim 31 wherein the different points in said simulation at which the simulation results are displayed represent at least one of a time increment, one of a series of frequencies, or a value in a series of model parameter values.

41. In an electronic device holding a CAD environment, a medium holding executable steps for a method, said method comprising the steps of:

providing simulation results from simulation of a system model of a Micro Electro-Mechanical System (MEMS), said system model having a plurality of model components;

providing a graphical three-dimensional (3D) view of said system model; and

displaying the results of said simulation in said 3D view, said 3D view being progressively altered to reflect the simulation results during different points in said simulation.

42. The medium of claim 41 wherein said system model includes at least one optical component.

43. The medium of claim 41 wherein said system model includes at least one mechanical structure.

44. The medium of claim 43 wherein the simulation of said mechanical structure involves at least one of displacements, mode shapes and distortion of the mechanical structure.

45. The medium of claim 43 wherein said system model includes at least one connection between mechanical components, said connection representing mechanical degrees of freedom of the connected mechanical components.

46. The medium of claim 41 wherein said simulation results are animated in said 3D view.

47. The medium of claim 41 wherein at least one of the speed and a viewing characteristic of the 3D view of the results of said simulation is controlled by user-set parameters.

48. The medium of claim 41 wherein said simulation is one of a circuit simulation and a signal flow simulation.

49. The medium of claim 41 wherein said method comprises the further steps of:

associating a 3D view generator with a model component referenced by said system model;

analyzing programmatically said system model to identify model components associated with a 3D view generator; and

using said 3D view generator to generate the display of the simulation results.

50 The medium of claim 41 wherein the different points in said simulation at which the simulation results are displayed represent at least one of a time increment, one of a series of frequencies, or a value in a series of model parameter values.

51. In a CAD environment, a system, comprising:

a plurality of Micro Electro-Mechanical System (MEMS) model components, said MEMS model components including a mathematical behavioral model, a graphical symbol for display in a schematic view, and a three-dimensional (3D) view generator, said 3D view generator being computer code holding information necessary for the 3D display of an associated MEMS model component;

a schematic editor used to create and control a schematic view for display to a user and an underlying system model, said system model including a plurality of MEMS model components selected from said library of MEMS components; and

a schematic visualizer, said schematic visualizer analyzing said system model to identify a plurality of MEMS components associated with said 3D view generators, said 3D view generators being used by said schematic visualizer to generate a 3D view of said system model.

52. The system of claim 51, comprising further:

at least two views of said system model, said 3D view of said model and a symbolic view providing a hierarchical listing of components and sub-components in said model.

53. The system of claim 52 wherein at least two of said views are cross-referenced such that the selection of a component in one view causes the indication of the selection of the corresponding component in one of said other views.

54. The system of claim51 wherein the view characteristics of said 3D view of said model are configurable by a user.

55. The system of claim 51, comprising further:

a simulator able to simulate the execution of the system model depicted in said 3D view; and

a simulation result visualizer used to display simulation results generated by said simulator to said user by altering the display of said 3D view of said model by altering the appearance of said 3D view to reflect different points in said simulation.

56. The system of claim 55 wherein said simulator is one of a circuit simulator and signal flow simulator.

57. The system of claim 55 wherein the display of said simulation results to a user is configurable by a user to adjust at least one display characteristic of the simulation results.